

**Testimony of Dian M. Grueneich
Commissioner, California Public Utilities Commission**

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INTRODUCTION

Chairman Markey, Ranking Member Upton, and Members of the Subcommittee: Thank you for your invitation to testify today. My name is Dian Grueneich and I am a Commissioner at the California Public Utilities Commission. I was appointed to the Commission in 2005 by Governor Schwarzenegger and I bring over 30 years of experience in energy and environmental issues to my service on the Commission. In my four years at the Commission, I have served as the lead commissioner on a number of major transmission permitting cases, with a focus on siting transmission lines to areas of high renewable potential. I am also one of California's representatives on the Western Renewable Energy Zones (Western REZ) Initiative and a utility commission representative on the Western Interconnection's Transmission Expansion Planning and Policy Committee (TEPPC).

I currently serve on a number of energy advisory counsels, including the U.S. Department of Energy's Electricity Advisory Committee (EAC) and its Smart Grid Subcommittee and the U.S. EPA/DOE's National Action Plan for Energy Efficiency Leadership Group. Last year I participated in the EAC's preparation of reports on both what needs to be done at the federal level to support a smart grid, and how we should move forward on transmission planning and permitting.¹

I am speaking today in my capacity as an individual Commissioner at the Commission and my views do not necessarily reflect the views of the entire Commission.

OVERVIEW

My testimony addresses three areas of the discussion draft of the American Clean Energy and Security Act of 2009 (ACES):

- 1) Renewable energy;
- 2) Transmission planning; and

¹ Both Electricity Advisory Committee reports are available at:
<http://www.oe.energy.gov/eac.htm>

3) Smart grid.

In my view, enactment of the ACES would be a paramount step towards addressing global warming, maintaining our environmental and economic well-being, and ensuring this country's national security. The ACES strikes an appropriate balance by setting important national policies while recognizing that the actual implementation of the transition to a clean energy economy will occur at the state and local levels. It recognizes the vital role that state agencies and others at the state level must exercise in this transition and sets forth a workable state/federal partnership, under an umbrella of key national policies. I highlight below some specific areas where the state/federal partnership can be enhanced under the ACES.

California has addressed climate change and our state's economic and environmental future through a combination of programmatic requirements and market mechanisms. Both are needed. The ACES also adopts a comprehensive approach to reducing greenhouse gas emissions. Critically, it embraces energy efficiency as a priority item, coupled with a national renewable electricity standard and development of America's smart grid. It also contains a low-carbon transportation fuel standard, support for development of carbon capture and sequestration (CCS) technologies, and a market-based cap and trade program.

In addition to expanding this nation's commitment to energy efficiency, a critical tool for transitioning the United States electricity sector into a low-carbon economy is extensive, immediate, and accelerated renewable resource development. The ACES recognizes this, and sets forth a rational approach to renewable resource development, building upon - rather than replacing - the extensive state efforts to date to support renewable development.

The discussion draft also recognizes that a time-critical component of developing renewable resources is transmission infrastructure. Most of the renewable-rich resource areas in this country are located in remote areas far from population centers and the existing transmission grid. To move those renewable resources to consumers, the ACES establishes a bottoms-up regional transmission planning process, with Federal Energy Regulatory Commission (FERC) oversight and support, to meet its renewable goals. Again, the discussion draft recognizes the key role that states currently have in transmission development and it seeks to add the support of the federal government to facilitate and enhance regional collaborative planning efforts to meet defined clean energy goals.

Finally, the ACES provisions on smart grid create a strong framework to bring the nation's electricity grid into the digital age, thereby maximizing the potential for energy efficiency, demand response, and distributed generation as well as overall efficient operation of our electricity system. Most of the smart grid decisions will be made at a local and state level, through the decisions of state regulatory commissions, utilities, and the private sector. The ACES provides a useful framework to support these decisions and

I discuss below additional technical assistance in this area that would be extremely helpful to states.

RENEWABLE ENERGY PROVISIONS

The key features of the ACES's renewable provisions are as follows:

- 1) Establish a national Renewable Electricity Standard (RES or renewable standard);
- 2) Allow energy efficiency to be used to meet the renewable standard under narrow circumstances and in limited quantities;
- 3) Provide a credit multiplier for renewable distributed generation used to meet the renewable standard; and
- 4) Create renewable credit trading systems to complement existing state and regional systems.

With regard to the renewable standard, the ACES sets renewable energy requirements that almost all entities selling electricity to the public must meet. The standards start at 6% of retail sales in 2012 and go to 25% of retail sales by 2025. These requirements are aggressive, but achievable.

There is no question that the United States has the renewable resource potential and technical ability to meet ACES's renewable standard. Using publicly available government data, the energy engineering and consulting firm of Black & Veatch projects that the United States has over 400 gigawatts of renewable resources that can be developed by 2025.² This amount is significantly more energy than required by the discussion draft's renewable standard, and does not even include the nation's abundant solar photovoltaic and hydroelectric resources. The Union of Concerned Scientists (UCS) similarly found in a 2003 study that "[w]ind, solar, bioenergy, geothermal, and landfill gas have the technical potential to provide more than five times the electricity currently needed by the United States. Thirty states have the potential to generate all of their electricity from non-hydroelectric renewable energy and still export clean power to others." UCS also found that "[w]hile the upper Midwest and Great Plains states have the greatest potential, every state has the potential to produce more than one-quarter of its current electricity use from renewable energy."³

These findings are confirmed by current events. As of January 2009, 28 states have taken it upon themselves to adopt mandatory renewable standards; 5 others have

² Supporting information is not yet publicly available.

³ *Plugging In Renewable Energy: Grading the States*, Union of Concerned Scientists (May 2003) is available at:
[http://www.ucsusa.org/assets/documents/clean_energy/plugging_in_renewable_energy.p
df](http://www.ucsusa.org/assets/documents/clean_energy/plugging_in_renewable_energy.pdf)

adopted renewable goals, some of which will become mandates.⁴ Requirements range from 10% by 2015 to as high as 25% to 30% in later years. Implementation of some renewable energy standards has been so successful that states are raising the standards, or extending them to more parties. For example, in California Governor Schwarzenegger has issued an Executive Order calling upon the state to increase its 20% standard to 33% by 2020.⁵ The California Air Resources Board has embraced this goal to facilitate California's climate change policies, and the state legislature is currently considering several bills to codify this requirement.

Texas exceeded its initial 2,000 MW renewable energy standard four years early and subsequently increased its standard to 5,880 MW by 2015 and 10,000 MW by 2025.⁶ Connecticut increased its renewable requirements in 2003 to extend to all utilities in the state. Iowa met its standard in 1999.

The ACES takes the nation to the next level. A forthcoming study by the National Renewable Energy Lab (NREL) compares the requirements of the various renewable proposals currently pending in Congress. It finds that the proposed bills with lower renewable standards will result in little or no additional renewable generation above what state efforts will produce on their own. The renewable requirements of the ACES, however, will deliver significantly more than the current state efforts.

As I have outlined above, there is substantial renewable potential throughout the United States that can be developed in the next decade. Importantly, though, the ACES recognizes that not all states are created equal when it comes to renewable resources. Some states have extensive traditional renewable resource areas – vast undeveloped areas with high concentrations of solar, wind, or geothermal potential - others have less. The ACES addresses this issue in a sensible manner.

First, it allows a state to petition the Secretary of Energy for approval to use energy efficiency measures to meet up to 20% of the renewable standard. This provision gives providers flexibility to work towards their RES obligations. However, this flexibility must contain safeguards to ensure that renewables are maximized and the overall clean energy goals of the ACES are achieved. First, the ACES must contain strong thresholds to ensure that this provision is used only upon a solid demonstration of an inability to meet the renewable standard through generation and/or renewable electricity credits. Second in order to avoid double counting, this provision should be clarified to ensure that savings from any energy efficiency measure used to meet a

⁴ Additional information on state renewable requirements is available from the Pew Center on Global Climate Change at:

http://www.pewclimate.org/what_s_being_done/in_the_states/rps.cfm

⁵ Executive Order S-14-08 (November 17, 2008) is available at:

<http://gov.ca.gov/executive-order/11072/>

⁶ *Texas Renewable Portfolio Standard*, State Energy Conservation Office, available at http://www.seco.cpa.state.tx.us/re_rps-portfolio.htm

renewable standard are in addition to savings resulting from ACES's energy efficiency performance standard.

Second, the discussion draft allows a credit multiplier for renewable distributed generation. It grants three renewable energy credits for every megawatt hour of power generated from a renewable distributed generation facility, and only one credit for power from traditional utility-scale renewable generation projects. Notably, because most distributed generation will not require transmission upgrades, these resources can be developed significantly faster than traditional utility-scale renewable generation. Thus, a state or provider committed to a distributed generation model to meet renewable requirements could quickly outperform others considered to be "renewable-rich" in the more traditional sense because of the timeframe needed to plan and construct the transmission needed to bring utility-scale renewables to market. Because of these distributed generation benefits, clarifications should be made to expressly state a national policy that prioritizes development of local renewables, which reduce transmission needs, create local jobs, and facilitate grid reliability. Clarifications should also be made to ensure that FERC's rules, including any new transmission planning policies as well as transmission investment approvals, do not discourage investments in near-load generation.

Third, the bill requires the creation of national/regional markets where renewable electricity credits will be traded and sold. Retail providers of electricity will be able to purchase renewable electricity credits to meet the renewable standard. Market prices for credits are expected to reflect the difference between the cost of traditional power and renewable power such that a load serving entity will be agnostic between purchasing renewable power, and purchasing traditional power plus a renewable energy credit – the price should be the same.

Many states are legitimately concerned with capturing the jobs that will be created in our economy's transition from fossil-dependence to renewables. This transition will generate good jobs and these jobs will not be limited to the locations where renewable facilities are constructed and operated. There will be manufacturing jobs to produce the components for the facilities – such as solar panels and wind turbines – which will not be located where the renewable facilities are built. According to a new UCS analysis, a national standard like the one proposed in this bill would boost the economy while protecting the environment. The UCS study finds that a 25% national renewable standard would create 44,500 long-term manufacturing jobs.⁷ Other studies have found that many of these jobs will likely be located in the Southeast and industrial Midwest.

Finally, with regard to the renewable requirements of the discussion draft, there are undoubtedly details that need to be addressed as this discussion draft proceeds. I urge that any necessary corrections be made:

⁷ "Clean Power: Green Jobs," Union of Concerned Scientists (2009) is available at http://www.ucsusa.org/clean_energy/solutions/renewable_energy_solutions/clean-energy-green-jobs.html

- To avoid double counting of renewable energy credits;⁸
- To ensure that states are not unfairly penalized if renewable energy credit markets do not materialize in a timely fashion, or do not provide credits at the anticipated price; and
- To ensure that state efforts to exceed federal renewable requirements are not discouraged.

These issues are being addressed by other state/federal organizations as so I will not explore them in detail here.

TRANSMISSION PLANNING

The second major area I will address is the transmission planning section of the discussion draft. The ACES contains three fundamentally important elements that will encourage the collaborative process necessary for successful regional transmission planning and the ultimate development of new transmission lines:

- 1) A national renewable electricity standard that will provide the framework for regional transmission planning;
- 2) Federal policy objectives to guide regional planning; and
- 3) A bottoms-up transmission planning structure with FERC providing oversight and support.

The renewable electricity standard set forth in the ACES is the most important transmission planning provision of the bill – even though it is not in the transmission planning section. Regional transmission planning has been factionalized, in part, because there is no consensus on the ultimate goal. Adopting a specific and mandatory national renewable electricity standard, in addition to strong state and national commitments to energy efficiency, support for development of local renewables, and performance standards for new coal-fired power plants,⁹ will provide the necessary context and goals for transmission planning.

The federal transmission planning policy objectives set forth in the ACES require, for the first time, that transmission planning consider demand-side options, including energy efficiency, distributed generation, smart-grid technologies, and demand response, as well as renewable energy on the supply-side. This statement of policy objectives is critical. In requiring that these resources be considered in transmission planning, the ACES optimizes transmission investments by greatly reducing the possibility of unnecessary transmission infrastructure and stranded investments. As mentioned above, these policy objectives should be clarified to require regional planning efforts, as well as FERC planning and investment rules, to make maximization of these resources a priority.

⁸ Thus, for example, it may make sense to issue a single credit for each megawatt-hour (MWh) of distributed generation but count three credits for compliance purposes only.

⁹ ACES § 116.

The ACES establishes a timeframe for action on regional grid planning and requires FERC to support and encourage regional planning collaboration with funding, technical expertise, and conflict resolution resources. The ACES requires FERC to adopt national grid planning principles consistent with the federal policy objectives within one year of enactment. It requires regional planning entities willing to adopt FERC's planning principles to identify themselves to FERC within three months of FERC's adoption of the planning principles. It then requires those regional planning entities to submit initial regional transmission plans to FERC 18 months after FERC's adoption of the planning principles. Based on my experience, this structure and its timeframes are appropriate. The discussion draft properly recognizes the role of the states and regions in planning to respond to their energy infrastructure needs. However, it provides the critical national policy framework previously missing from these planning efforts, and FERC resources to use when needed.

There is a significant issue with transmission development that must be addressed. In my experience, federal government agencies have often been a primary reason for significant delay in processing transmission line permits. It is almost impossible to build a line in the Western Interconnection without crossing federal land, often triggering the need for review under the National Environmental Policy Act – NEPA. In these circumstances, it is the California Public Utilities Commission's standard practice to sign memorandums of understanding (MOUs) with the federal agency that shares joint permitting responsibility. These MOUs include commitments to a detailed schedule of events. Nevertheless, the federal agencies routinely fail to meet these deadlines by multiple months, in one case causing an 18 month delay in the construction of a renewable resource transmission project.

To address this issue, the ACES should include provisions requiring one federal agency to be the lead agency responsible for all federal agency participation in transmission planning and permitting efforts. Federal agencies expected to process renewable transmission line applications should also be provided sufficient financial and staff resources to make this permitting a priority and to engage in pre-application activities that streamline the permitting process.

SMART GRID

The smart grid – by which I mean the broad range of technology solutions to optimize the reliability, security and efficiency of the electric system and to maximize the potential of demand side resources – presents huge opportunities but faces substantial challenges. The key question is how to bridge the gap between the promise and the reality of the smart grid.

The 2007 Energy Independence and Security Act (EISA) laid a strong foundation by requiring the development of an interoperability framework for smart grid protocols and standards, providing for research, development and demonstration of technologies, ensuring the free flow of information to end users, requiring states to review state policies

on grid related investments and cost recovery, establishing a smart grid task force to coordinate the work of the multiple federal agencies, and directing DOE to form a national smart grid advisory group – on which I sit – to advise in the development of the national smart grid. The ACES builds on this foundation by requiring that:

- 1) States set peak demand reduction goals for load serving entities (LSEs) and requiring LSEs to develop a plan to reach those goals;
- 2) FERC develop a methodology to calculate baseline peak demand and DOE to develop a system of measurement and verification of demand reductions, thereby ensuring that the benefits from the smart grid are real; and
- 3) The federal Energy Star program be expanded so that end users can easily identify products which will bring the benefits of the smart grid into homes and businesses.

Thus, the overall federal program will: (1) set standards and incentives for infrastructure development by electricity providers; (2) set minimum goals to ensure that smart grid infrastructure investments produce real peak demand reductions; and (3) set standards for, and encourage end users to, make purchasing decisions that will benefit not only the individual, but also the system as a whole.

These provisions are an excellent foundation for developing the smart grid. However, two additional items should be included:

- 1) Expansion of federal technical resources to assist states and others in the cost-effective deployment of smart grid technologies; and
- 2) Provisions to address the overlap between the peak demand goals and the energy efficiency resource standard.¹⁰

Developing an integrated system requires a multi-year, phased installation of devices and other technologies, some of which do not yet exist. It also depends on a substantial investment of electric ratepayer funds, taxpayer funds, and private investment, which will be made through multiple decisions by a number of government agencies and private entities with little coordination. While EISA and the ACES provide for standards and protocols for smart grid interoperability as well as measurement and verification of usage reductions, neither Act requires an overall national effort focused on technical assistance to guide the thousands of regulatory and business decisions that will impact smart grid deployment. The ACES does require FERC to facilitate, to the extent practicable, coordination between the federal smart grid program and state demand response and other peak load programs. However, ACES does not provide guidance on the qualitative standards and policies that states should aspire to.

The Smart Grid Subcommittee of the DOE Electricity Advisory Committee recently issued a report on the smart grid which recommended additional technical

¹⁰ ACES § 231 *et seq.*

assistance that DOE can provide to the states (EAC Report).¹¹ Such assistance will be particularly valuable to state regulatory commissions, which will be on the frontline in decision-making regarding smart grid development. As set forth in the EAC Report, this technical assistance should include:

- A description of the essential components under a smart grid.
- A prioritization for the development of these components.
- Identification of smart grid subsectors that particularly need further investment.
- A timetable for smart grid investments necessary by utilities and other stakeholders throughout the United States.
- Identification of the areas in the electrical grid that need to interact seamlessly.
- Identification of appropriate standards to facilitate the rapid development and utilization of smart grid technologies.

Finally, Section 143(c) of the ACES requires states to establish peak demand reduction goals for 2012 and 2015 and requires LSEs to prepare peak load reduction plans to meet the goals. LSEs can employ any combination of specified demand reduction measures to meet the goals, including “energy efficiency measures with reliable and continued application during peak demand periods.”¹² However, it is unclear whether and how the energy efficiency measures employed as peak demand reductions in accordance with Section 143(d)(1) will interact with the energy efficiency measures employed to meet the Section 231(d)(2) electricity savings requirement.

The potential for double counting by using a single set of measures to meet both sets of goals is substantial. Many energy efficiency measures, such as insulation, efficient air conditioners, and refrigerators, also provide reliable peak demand reductions. If the peak demand reduction goals set by a State are low enough, it is possible that no additional savings from those already achieved under Section 231(d)(2) would be needed to meet the peak goals in the smart grid provision. Under this scenario, the massive investment in smart grid infrastructure may not yield equivalent benefits for consumers.

Further, as noted above, states may also meet up to 20 percent of the renewable electricity standard with energy efficiency measures. Theoretically, a single measure could be used to meet all three requirements.

Clarification is necessary to define the interrelationships among peak demand reductions, efficiency savings, and the renewable standard. Ideally, in order to maximize benefits from all three resources the ACES should prohibit any overlap. If some double-

¹¹ *Smart Grid: Enabler of the New Energy Economy*, A Report by the Electricity Advisory Committee (December 2009) available at: <http://www.oe.energy.gov/eac.htm>

¹² ACES § 143(d)(1).

counting is allowed, then additional language should be added to ensure that benefits from smart grid investments are maximized. Some possible measures include:

- 1) A numerical limit, similar to the cap on the use of efficiency measures to meet the renewable standard, on the overlap between measures used to meet the electricity savings requirements, and measures used to meet the smart grid goals, coupled with strong standards on the circumstances in which such overlap is permitted; and/or
- 2) A requirement that the peak demand measures set forth in Section 143(d)(2) (e.g., direct control appliances and equipment, dynamic electricity storage) are maximized before employing energy efficiency measures to meet the goals.

CONCLUSION

The ACES is a pivotal step on the path to a vibrant, green economy and the reduction of greenhouse gas emissions. It recognizes the key role of states as partners with the federal government in developing our clean energy future. Thank you for the opportunity to provide these comments on this extremely important piece of legislation. It has been an honor to appear before you on these critical matters.